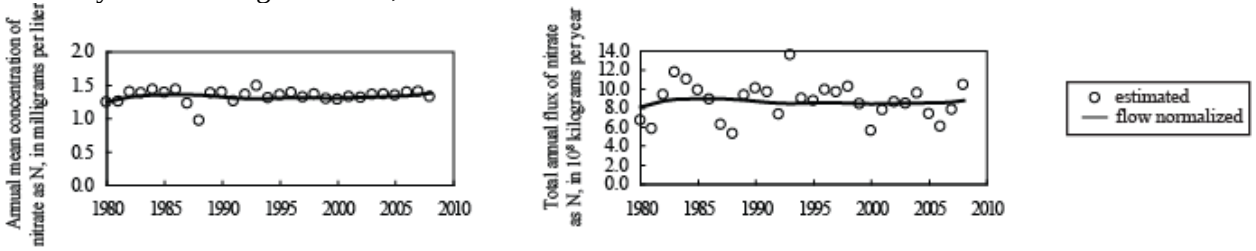
Mississippi River above Old River Outflow Channel, LA

Flow-normalized nitrate concentration and flux

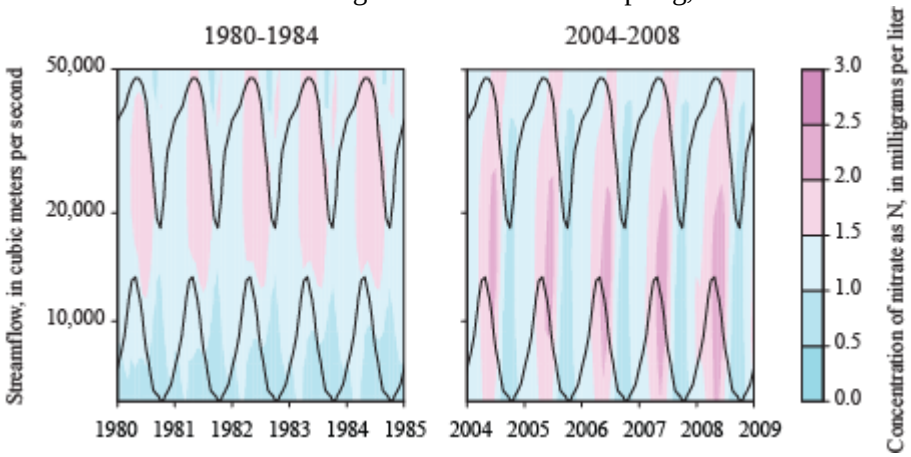
Percentage changes in flow-normalized nitrate concentration and flux between 1980 and 2008 were 10 and 9%, respectively, at Mississippi River above Old River Outflow Channel, LA. Flow-normalized concentration and flux generally increased during the 1980s, were relatively stable during the 1990s, and then increased after 2000.



EXPLANATION: Estimated concentration and flux are strongly influenced by changes in climate and streamflow. For example, concentration and flux of nitrate are different during floods than during droughts. Flow-normalized concentration and flux are independent of changes in streamflow, so they can provide greater insight into the effects of conservation practices and other changes in the watershed.

Comparison of nitrate concentrations over time and with streamflow

Nitrate concentrations at Mississippi River above Old River Outflow Channel increased at low and moderate streamflows but decreased at high streamflows. Decreases at high streamflows were comparable to increases at low and moderate streamflows, particularly in the spring and summer. Notably, concentrations decreased at high streamflows in the spring, when nitrate fluxes were highest.



EXPLANATION: These contour plots show model estimates of concentration as a function of time and streamflow for two 5-year snapshots in time—an early period from 1980 to 1984 and a recent period from 2004 to 2008. Any vertical line shows how concentration would have varied with streamflow on a particular day of a particular year; any horizontal line shows how concentration would have varied over time (seasonally and annually) at a particular streamflow. Because the probability distribution of streamflow changes from day to day, smoothed estimates of the 5th and 95th percentiles of streamflow on each day are plotted as black lines.

Map of sampling location:

http://waterdata.usgs.gov/la/nwis/nwismap/?site_no=07373420&agency_cd=USGS

For this site, streamflow was the sum of that measured at Mississippi River at Tarbert Landing, MS (U.S. Army Corps of Engineers site 01100) and Old River Outflow Channel near Knox Landing, LA (total outflow; U.S. Army Corps of Engineers site 02600); nutrient data was measured at Mississippi River near St. Francisville, LA (U.S. Geological Survey site 07373420). The Mississippi River above Old River Outflow Channel, LA, site, as defined here, is intended to provide an approximation of the concentration and flux of nitrate from the Mississippi River basin just upstream from the Old River Outflow Channel.

Link to water-quality data:

http://infotrek.er.usgs.gov/nasqan_query